

Listing of claims

The following listing of claims replaces all previous listings of claims.

1.-50 (Canceled)

51. (Previously presented) A device for duplicating and characterizing nucleic acids in a reaction chamber, comprising a reaction chamber defined by:  
a chamber support having an optically permeable first surface facing the reaction chamber;  
a chamber body sealingly and unreleasably placed on the chamber support and including:  
a recess having an edge configured to support a chip; and  
an inlet providing fluid communication between the reaction chamber and an environment external to the reaction chamber; and  
a rigid optically permeable chip, sealingly supported by the edge of the recess, and having a second surface facing the reaction chamber, the second surface having an array of multiple different polynucleotide probes immobilized thereon, wherein the first and second surfaces are substantially parallel.

52. (Previously presented) The device of claim 51, further comprising a temperature adjustment means connected with the chamber support and adapted to permit a rapid temperature control of the continuous cavity.

53. (Previously presented) The device of claim 52, wherein the temperature adjustment means are situated on a side of the chamber support facing towards the chamber body.

54. (Previously presented) The device of claim 52, wherein the temperature adjustment means are configured such that the optical transparency of the chip remains unaffected at least at the array.

55. (Previously presented) The device of claim 54, wherein the temperature adjustment means comprise micro-structured heating elements.

56. (Previously presented) The device of claim 51, wherein the chamber support comprises systems for thoroughly mixing a liquid sample, the systems being configured such that the chip remains optically transparent at least at the array; and  
a quadrupole system, adapted to induce an electro-osmotic flow, is associated with the chamber support.

57. (Previously presented) The device of claim 56, wherein the quadrupole system includes gold-titanium electrodes.

58. (Previously presented) The device of claim 51, wherein the chamber support and the chamber body consist of at least one of glass, synthetic material, and optically permeable synthetic materials.

59. (Previously presented) The device of claim 51, wherein the chamber support consists of a thermally conducting material.

60. (Previously presented) The device of claim 51, wherein the chip consists of optically permeable materials including at least one of glass, borofloat glass, quartz glass, monocrystalline  $\text{CaF}_2$ , sapphire, PMMA and silicon.

61. (Previously presented) The device of claim 51, wherein the recess in the chamber body is an optically permeably conical recess aligned with the array.

62. (Previously presented) The device of claim 51, wherein the chamber body includes an inlet and an outlet spatially separate from each other, for charging the reaction chamber.

63. (Previously presented) The device of claim 62, wherein the inlet and the outlet are arranged unilaterally to the chip and are separated by a gas reservoir nose.

64. (Previously presented) The device of claim 51, wherein the chamber body is sealingly and unreleasably connected with the chamber support by at least one of an adhesive and weld connection.

65. (Previously presented) The device of claim 51, wherein the probes are immobilized through spacers.

66. (Previously presented) The device of claim 51, wherein the reaction chamber is adapted to allow characterization by at least one of optical detection and spectroscopy.

67. (Previously presented) The device of claim 51, wherein the chip is adapted to allow characterization by a silver precipitation reaction.

68. (Previously presented) The device of claim 51, wherein the first surface is held opposite to the second surface by the chamber body.